

Name Key

Solving Quadratic Equations Review

Solve each equation by factoring.

1. $x^2 - 6x + 8 = 0$

$$(x - 4)(x - 2) = 0$$

$$x = 4 \text{ or } 2$$

2. $y^2 - 3y = 40$

$$y^2 - 3y - 40 = 0$$

$$(y + 5)(y - 8) = 0$$

$$y = -5 \text{ or } 8$$

3. $4x^2 + 17x + 15 = 0$

$$4x^2 + 12x + 5x + 15 = 0$$

$$4x(x + 3) + 5(x + 3) = 0$$

$$(4x + 5)(x + 3) = 0$$

$$x = -\frac{5}{4} \text{ or } -3$$

4. $8y^3 + 2y^2 = 15y$

$$8y^3 + 2y^2 - 15y = 0$$

$$y(8y^2 + 2y - 15) = 0$$

$$y(8y^2 + 12y - 10y - 15) = 0$$

$$y[4y(2y + 3) - 5(2y + 3)] = 0$$

$$y = 0 \text{ or } -\frac{3}{2} \text{ or } \frac{5}{4}$$

7. $4x^2 - 25 = 0$

$$(2x + 5)(2x - 5) = 0$$

$$x = -\frac{5}{2} \text{ or } \frac{5}{2}$$

5. $x^2 - 49 = 0$

$$(x + 7)(x - 7) = 0$$

$$x = \pm 7$$

6. $16x^2 + 24x + 9 = 0$

$$(4x + 3)^2 = 0$$

$$x = -\frac{3}{4}$$

8. $x^4 - 2x^2 - 8 = 0$

$$(x^2 + 2)(x^2 - 4) = 0$$

$$(x^2 + 2)(x + 2)(x - 2) = 0$$

$$x = \pm 2 \text{ (+imaginary roots)}$$

9. $6x^2 - 26x - 20 = 0$

$$2(3x^2 - 13x - 10) = 0$$

$$2[3x^2 - 15x + 2x - 10] = 0$$

$$2[3x(x - 5) + 2(x - 5)] = 0$$

$$x = 5 \text{ or } -\frac{2}{3}$$

Solve each equation using the quadratic formula.

10. $x^2 - 4x - 2 = 0$

$$\frac{4 \pm \sqrt{16 - 4(-2)}}{2}$$

$$\frac{4 \pm \sqrt{24}}{2} = 2 \pm \sqrt{6}$$

11. $3x^2 + 12x + 7 = 0$

$$\frac{-12 \pm \sqrt{144 - 4(3)(7)}}{2(3)}$$

$$\frac{-12 \pm \sqrt{60}}{6} = \frac{-12 \pm 2\sqrt{15}}{6}$$

$$\frac{-6 \pm \sqrt{15}}{3}$$

12. $9c^2 + 12c - 1 = 0$

$$\frac{-12 \pm \sqrt{144 - 4(9)(-1)}}{2(9)}$$

$$\frac{-12 \pm \sqrt{180}}{18} = \frac{-12 \pm 6\sqrt{5}}{18}$$

$$\frac{-2 \pm \sqrt{5}}{3}$$

13. $2x^2 - 3x - 2 = 0$

$$\frac{3 \pm \sqrt{9 - 4(2)(-2)}}{4}$$

$$\frac{3 \pm \sqrt{25}}{4} = \frac{3 \pm 5}{4}$$

$$2 \text{ or } -\frac{1}{2}$$

14. $-4x^2 + 2x + 3 = 0$

$$\frac{-2 \pm \sqrt{4 - 4(-4)(3)}}{2(-4)}$$

$$\frac{-2 \pm \sqrt{62}}{-8} = \frac{2 \pm 2\sqrt{13}}{8}$$

$$\frac{1 \pm \sqrt{13}}{4}$$